

Remarks

Applicants have been requested to provide appropriate sequence identification numbers for the sequences depicted in figures 3, 6A, 6B, 7A, 7B, and 9 in order to comply with the sequence rules. As described below, the application has been amended herein to comply with the sequence rules. No new matter has been added by this Amendment.

The Examiner has indicated that the current application is in condition for allowance except as to matters of form. Applicants thank the Examiner for allowing Claims 1-11, 14, and 28-31. Applicants submit herewith new dependent claims 32-41.

Entry of these new claims is proper under 37 CFR 1.312 because the amendments will help to properly protect the invention, and will require no substantial amount of additional work on the part of the Office. **After entry of this amendment, claims 1-11, 14, and 28-41 are pending in this application.**

Amendments to the Specification

By this amendment, the Sequence Listing is replaced with a corrected listing. SEQ ID NOs: 14-16 are added to the Sequence Listing, to formally set forth the amino acid sequences originally depicted in FIG. 3 and/or FIG. 9. In particular, SEQ ID NO: 14 is added to set forth the amino acid sequence of *C. elegans* Δ^6 -desaturase (fat-3) in FIG. 3 and FIG. 9, SEQ ID NO: 15 is added to set forth the amino acid sequence of borage Δ^6 -desaturase (bord6) in FIG. 9, and SEQ ID NO: 16 is added to set forth the amino acid sequence of *Mortierella alpina* Δ^5 -desaturase (mord5) in FIG. 9. Paper and electronic copies of the replacement Sequence Listing (diskette) are submitted herewith.

The specification is also amended herein to comply with matters of form. Specifically, the specification is amended herein to provide appropriate sequence identifiers in the figure legends for the sequences depicted in figures 3, 6A, 6B, 7A, 7B, and 9.

Amendments to the Drawing

In FIG. 3, the name of the efd1 protein (*Euglena* Δ^8 -desaturase protein) has been amended to correct an obvious typographical error (“egd1” has been corrected to read “efd1”). Support for the amendment can be found, for example, on page 4, line 16, of the specification.

Also in FIG. 3, the sequence of the efd1 protein as listed has been amended according to the correct sequence as set forth in SEQ ID NO: 4. The sequence was corrected on June 11, 2003, based on the resequencing of plasmid vector pJW541, which contains the efd1 coding sequence. This plasmid is described in the specification (*e.g.*, beginning at page 23, line 25) and has been properly deposited with the American Type Culture Collection (ATCC Accession Number PTA-5206) (see Applicants’ Amendment and Response to Restriction Requirement, filed June 11, 2003).

New Claims

Applicants submit herewith new claims 32-41, which are all dependent from an allowed claim. The new claims are being added to the application in order to better ensure proper protection of specific aspects of the invention, in its full scope.

These new dependent claims use language essentially identical (but for adaptations required to ensure antecedent basis) to that found in allowed claims. No new language is introduced by this amendment, and no additional searching will be required as each added claim depends from at least one allowable claim. There is therefore no additional burden on the Office, to enter these claims into the application. Since all of the added claims depend from an allowed claim, the claims are patentable as written.

Applicants request consideration and entry of this Amendment, and acknowledgement that all of the claims are allowed. If any questions remain, the Office is requested to telephone the undersigned attorney.

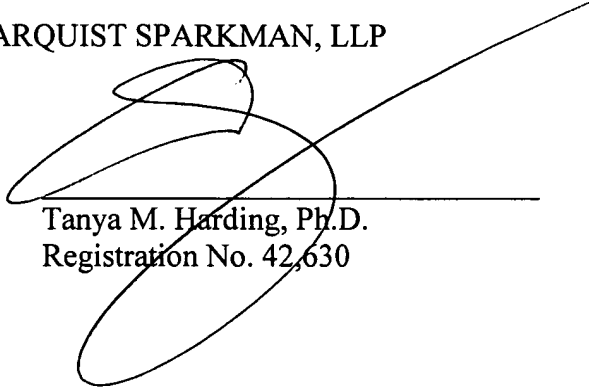
Conclusions

It is believed that this Amendment fully addresses the formal matters discussed in the Office action. Applicants therefore respectfully request that a timely Notice of Allowance be issued in this case. The Examiner is requested to telephone the undersigned at the number listed below if it may expedite the issuance of the claims.

Respectfully submitted,

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fat-4 1 MVLREQEHPEFFLIKIDGKWCQIDDAVLRSHPGGS.AITTYKNMDATTVEHTEHTEHGSKEAY
egd1 efd1 1 MKSKROALSPLOEM. EETVDVSAWVNFHPGGAETIENYQGRDATDAEMVMH.FOEAF
fat-3 1 MVV.DKNASGLRMKVQDGKWLILSEELVTKKHPGGA.VIEQYRNSDATHITFHAFHEGSSQAY

Handwritten annotations: "15" deleted "G" to "T", "L" to "I", "E" to "T", "D" added, "6" added, "Q" deleted, "HPGG", "G", "F", "H", "Cytochrome b₅-like domain"

fat-4 60 QWLTELKKECPTQEPPIPIKDDPIKGIDDVNMGTENISEKRSQINKSFITDLRMVRAE
egd1 efd1 56 DKLRMPK.....INPSFELPPQAAVNEAQEDFRKLREELIAT
fat-3 59 KOLDLLKKH..GEHDEFLEKLEKRLDKVDINVSANDVSVAQEKMMVESFEKLROKLHDD

Handwritten annotation: "F" to "S"

fat-4 120 GLMDGSPLEYIRKILETITITLFAFYLO.YHTYYILPSAILMGVAWQQLGWLIEHFAHHQL
egd1 efd1 94 GMEDASPLWYSYKISTITLGLGVLYELMVQYQMYFIGAVILLGMHYQQMGWLSHDICHHOT
fat-3 117 GLMKANETYFLKAIISTLSIMAFAYLO.YLGGWYITSACLLALAWQQFGWLTHEFCHQOP
HXXXHH

fat-4 179 FKNRYMNDLASIEVGNFLOQFSSGGWKEQHNVHHAATNVVGRDGLDLVPEYATVAEHLN
egd1 efd1 154 FKNRNWNNLVGLVFGNGLQGFSVTKWKDRHNAHHSATNVQGHDEDIDNLPPLAWSEDDVT
fat-3 176 TKNRPLNDTISLFFGNFLOQFSRDWWKDKHNTHHAATNVITDHDGIDIDLAPLEAFIPGDLIC

Handwritten annotations: "C" to "W", "HXXXH", "P" to "L"

fat-4 239 NY..SODSWMTILFRWOHVHWTMLPELRISWLLLOSTIEFVSOMPTHYDYRNTAIMEQV
egd1 efd1 214 RASPISRK...LITQEQYYELVICILLRFIWCFOQVLTVRSILKDRDNOFYRSQYKKEAL
fat-3 236 KYKASFEKATIKIVPYQHLYFTAMLPLRFSWTGQSVOVVFKENQMEYKVYQORNAEWEQA

Handwritten annotations: "C" to "S", "P" to "S"

fat-4 297 GLSLHWAW.SLGQLYFLPDWSTRIMEFLVSHLVGGFLLSHVVTFNHYSVEKFAISSNIMS
egd1 efd1 270 GLALHWTLKALFHLFFMPSILTSLLVFVSELVGGFGIATVVFNMHYPLEKIGDVPWDGH
fat-3 296 TIVGHAW.VFYQLFLLPTWPLRVAYFIISOMGGGLLIAHVVTFNHNSVDKYPANSRILN

fat-4 356 NYACLQIMTTRNMRPGREFIDWLWGGGLNYQIEHHLFPTMPRHNLNTVMPLVKEFAAANGLP
egd1 efd1 330 GFSVGOIHETMNTIRGIIITDWEFGGLNYQIEHHLWPTLPRHNLTAVSQVEQLCQKENLP
fat-3 355 NFAALQIILTTRNMTSPFIDWLWGGGLNYQIEHHLFPTMPRCNLNACMKYVKEWCKENNLP
HXXXHH

fat-4 416 YMVDDYFTGFWLETEQERNIANVAAKLTK.KIA
egd1 efd1 390 YRNPLPHEGLVILLRYLAVFARMAEKQAPAGKAL
fat-3 415 YLVDDYFDGYAMNLQOLKNMAE...HIOA.KAA

FIG. 3